

## **ABSTRACT**

1           A method of determination of fluid pressures in a subsurface region of the earth  
2       uses seismic velocities and calibrations relating the seismic velocities to the effective  
3       stress on the subsurface sediments. The seismic velocities may be keyed to defined  
4       seismic horizons and may be obtained from many methods, including velocity spectra,  
5       post-stack inversion, pre-stack inversion, VSP or tomography. Overburden stresses may  
6       be obtained from density logs, relations between density and velocity, or from inversion  
7       of potential fields data. The seismic data may be P-P, P-S, or S-S data. The calibrations  
8       may be predetermined or may be derived from well information including well logs and  
9       well pressure measurements. The calibrations may also include the effect of unloading.  
10      The determined pressures may be used in the analysis of fluid flow in reservoirs, basin  
11      and prospect modeling and in fault integrity analysis.